Unapproved Minutes

IEEE P802.3db 100 Gb/s, 200 Gb/s, and 400 Gb/s Short Reach Fiber Task Force
Telephonic Plenary Meeting, November 10 & 12, 2020

Webex Meeting
November 10 & 12, 2020
Prepared by Mabud Choudhury

Group Name: IEEE P802.3db 100 Gb/s, 200 Gb/s, and 400 Gb/s Short Reach Fiber Task Force
Date/Location: Tuesday, November 10 and Thursday, November 12, 2020. Telephonic Plenary meeting
Chair: Robert Lingle, Jr, affiliated with OFS
Recording Secretary: Mabud Choudhury, affiliated with OFS
Meeting Participants: Attendance is listed in Appendix A (70 attendees on November 10. 87 attendees on November 12)

Call to order:
IEEE P802.3db 100 Gb/s, 200 Gb/s, and 400 Gb/s Short Reach Fiber Task Force (TF) Telephonic Plenary meeting was convened at 12:01 PM Eastern Daylight Time (EST/ UTC -5), Tuesday, November 10, 2020 by Robert Lingle, Jr., TF Chair.

Mr. Lingle welcomed attendees. He requested that each attendee indicate their first name, last name, and affiliation via Webex name displayed (preferred) or via chat to everyone.

Chair's Presentation:
Title: "Agenda and General Information"
Presenter: Robert Lingle, Jr. (OFS)
agenda_3db_01a_1120.pdf

Mr. Lingle then proceeded with reviewing the **Agenda** and asked if there any modifications, additions, or deletions? There were none

- Welcome
- Approve Agenda
- November Plenary
- Attendance
- Approve Meeting Minutes for November 5 Telephonic Interim
- Goals for this meeting
- Big Ticket Items
- Reflector and Web
- Ground Rules
- IEEE

Structure, Bylaws and Rules
Call for Patents
IEEE Standards Process

- PAR & Objectives
- Liaisons and Communications
- Contributions

- Straw Polls & Motions
- Future Meetings

Chair also reviewed **Goals for the meeting**:

- Review 11/5 straw poll for reach objectives
- Review 11/5 straw poll for linear interface – time permitting, if requested
- Discuss timeline for TF project
- Possible motions for new objectives, timeline – time will be prioritized for this
- One presentation request was missed before the 10/29 meeting, with make-up scheduled on Thursday 11/12

Motion #1:
Move to approve the Agenda for Plenary TF Teleconference, Slide 4 of agenda_3db_01_1120.pdf

- M: James Young
- S: John Abbott
- Approved by unanimous consent. (Procedural > 50%)

Agenda approved at 12:11 PM

Attendance: Chair requested that everyone log in to http://imat.ieee.org/
to officially record their attendance. No session code for plenary meeting. There were issues with IMAT, so attendance is based on Webex attendance.

Approve Meeting Minutes for November 5 Telephonic Interim. Mr. Lingle asked if there were any corrections/updates to the posted unapproved meeting minutes. There were none.

Motion #2:
Move to approve meeting minutes for November 5, 2020 IEEE P802.3db 100 Gb/s, 200 Gb/s, and 400 Gb/s Short Reach Fiber Task Force Telephonic Interim meeting:
unapproved_meeting_minutes_3db_01a_110520.pdf

- M: Earl Parsons
- S: John Abbott
- Approved by unanimous consent. (Procedural > 50%)

Task Force Decorum: Chair asked for attendees to stay on mute when not speaking. Chair asked if anyone from the **Press** was present – no one indicated that they were from the Press – 12:17 PM.

Reflector and Web: Chair showed the links to the IEEE 802.3db 100 Gb/s, 200 Gb/s, and 400 Gb/s Short Reach Fiber Task Force page, and the email reflector.

Chair reviewed:
Ground Rules: slide 11 of agenda_3db_01_1120.pdf
IEEE Structure: slide 12 of agenda_3db_01_1120.pdf
Important Bylaws and Rules: slide 13 of agenda_3db_01_1120.pdf

IEEE SA Patent Policy: Mr. Lingle provided overview of slides 14-18 of agenda_3db_01_1120.pdf.
Chair made **call of essential patents** at 12:21 PM. No one indicated any essential patents.

IEEE SA Copyright Policy: Mr. Lingle showed slides 19-21 of agenda_3db_01_1120.pdf entitled "IEEE SA Copyright Policy" overview

IEEE SA Participation Policy: Mr. Lingle showed the participation policy overview slides 22-24 of agenda_3db_01_1120.pdf .

Mr. Lingle then reviewed the Overview of IEEE 802.3 Standards Process (slides 25-26 and 28-30 of agenda_3db_01_1120.pdf) – completed Study Group Phase, and now in Task Force Comment Phase (slide 26 of agenda_3db_01_1120.pdf). Selection of Baselines overview (slide 27 of agenda_3db_01_1120.pdf)

Contribution #1:
Title: "In support of a 100m objective(s) for 100 Gb/s wavelengths over MMF"
Presenter: Robert Lingle, Jr. (affiliated with OFS)
lingle_3db_01a_1120.pdf

- Presentation provided
    - There are both early adopters & later adopters among the likely users of 100G wavelengths over MMF, with different reach needs
    - Summarized TF presentations describing needs of large end users in hyperscale DCs in North America & China:
        - From expert affiliated with Google TF contribution shen_3db_01_110520.pdf , need for "PMD1", 50 m OM4 (30 m OM3) reach (our objectives adopted by WG in May 2020) for fiber to machine, Remote TOR application.
        - From expert affiliated with Alibaba TF contribution xie_3db_01_110520.pdf , need for 50 m, 80 m, 100 m (provides best coverage) OM4 reach for TOR-Aggregation applications. Need for "PMD2" 100 m OM4 reach.
    - There is a large installed base of MMF cable worldwide that was deployed, based on a 100 m reach for SR & SR4 optics, needing "PMD2." Continued forecast growth for MM applications.
- Technical discussion followed.
- Topics discussed included: criticism of the fact that the TF does not yet have baseline for 50 m MMF objective; Start 100m PMD in new project – too early for .3db TF. Will addition of 100m PMD delay 802.3db? Does 100 m reach PMD fit the approved CSD responses?
- Clarifying questions asked and answered.
- Author welcomed feedback from the group.
- Version 01a (link above) was updated to add Supporters.

Contribution #2:
Title: " Summary of Technical Feasibility Demonstrated for 100m OM4 MMF Links"
Presenter: Ramana Murty (affiliated with Broadcom)
murty_3db_01a_1120.pdf

- Presentation provided:
    - There is both a VCSEL-limited & a Fiber-limited Regime for 100G per λ over MMF.
    - TDECQ: Model and Measurements.
    - Evidence of Technical Feasibility from BER Measurements.
    - Differentiation of the PMDs: PMD1 30 m OM3 and PMD2 100 m OM4.
- Technical discussion followed.

- Topics discussed included: 30 m OM4 vs. 50 m OM4 possible cost benefit. Possible 30 m OM4 reach objective. 30 m OM4, 24 GHz will not impact penalty. <30 m dominated by VCSEL. 5 taps vs. 9 taps. VCSEL cost vs. overall module cost (declined discussion). Low power. Time required for Equalization. FEC latency vs. DSP latency.
- Clarifying questions asked and answered.
- Author welcomed feedback from the group.
- Version 01a (link above) was updated to correct filename (lyubomirsky_3db_01_1020.pdf) on slide 4, and to add slide numbers for presentation.

Meeting Break: TF Plenary meeting broke for the day at 1:54 PM

Meeting Resumed: TF Plenary meeting resumed and was called to order by Chair at 12:00 Noon EST/ UTC -5, Thursday, November 12.

Chair briefly reviewed Approved Agenda, IMAT attendance reminder (Webex attendance used for this meeting), Task Force Decorum, Key IEEE policies.

TF Editors: Chair announced that Ramana Murty affiliated with Broadcom and Earl Parsons affiliated with CommScope would be TF Editors. Mr. Lingle thanked the Editors for volunteering for this key TF responsibility.

Straw poll on 100 m reach objective:
Chair indicated that in the interest of time, there would not be any discussion on the straw poll since there was extensive TF discussion on reach objectives during November 5 TF Interim meeting and during November 10 TF Plenary meeting on Day 1. There was an objection noted for not having discussion on the straw poll.

Straw Poll #1 (100 m reach objective):
- I support adding reach objectives for up to at least 100m over MMF for 1, 2, and 4 fiber pairs:
  A. Yes
  B. No
  C. Abstain
- A: 49 B: 13 C: 13

Straw Poll #1 (reach objectives) Voter List:

	Attendees	A	B	C
1	Rick Pimpinella - Panduit Corp.	X		
2	Flavio Marques / Furukawa Electric	X		
3	Mabud Choudhury OFS	X		
4	Earl Parsons [CommScope]	X		
5	Yi Sun OFS	X		
6	David Lewis Lumentum	X		
7	John Johnson Broadcom	X		
8	Tom Mitcheltree - US Conec			X
9	Olindo Savi Hubbell			X

10	Kenneth Jackson Sumitomo	X		
11	Chan Chih David Chen AOI	X		
12	Lance Thompson - II-VI	X		
13	Ali Ghiasi [Ghiasi Quantum]	X		
14	Eric Maniloff Ciena		X	
15	Bob Voss PANDUIT	X		
16	Rajesh Radhamohan Broadcom	X		
17	Mike Klempa Amphenol			X
18	Sylvanus Lee Leviton	X		
19	Mike Dudek Marvell	X		
20	Qingya She Fujitsu	X		
21	Jeffery Maki [Juniper]	X		
22	Jose Castro Panduit	X		
23	Ilya Lyubomirsky Inphi Corp.	X		
24	David Piehler [Dell]	X		
25	Vince Ferretti Corning	X		
26	David Malicoat Independent / Senko	X		
27	Chris Diminico Panduit	X		
28	Inho Kim Marvell			
29	Kan Tan Tektronix			X
30	Massimo Sorbara [Globalfoundries]			X
31	Phil Sun Credo	X		
32	Matt Bolig Inphi			X
33	Kae Dube UNH-IOL			X
34	Mark Nowell - Cisco		X	
35	Ryan Latchman MACOM	X		
36	Beth Kochuparambil - Cisco		X	
37	Enis Akbaba @ Maxim Integrated		X	
38	Nathan Tracy TE	X		
39	Vera Koleva II-VI	X		
40	Pavel Zivny, Tektronix	X		
41	Edward P. Sayre, North East Systems Associates, Inc.	X		
42	Tom Palkert Macom, Samtec	X		
43	Bo Zhang [Inphi]			X
44	Sridhar Ramesh Maxlinear			
45	Richard Mellitz Samtec	X		
46	Ed Ulrichs Intel			
47	Brian Welch Cisco		X	
48	John S Abbott Corning	X		
49	Jennifer Wu, Inphi			X
50	Gergely Huszak Kone			
51	Leon Bruckman Huawei			X
52	Piers Dawe [Nvidia]	X		

53	Carlos Pardo KDPOF	X		
54	Nikolay Ledentsov - VI Systems	X		
55	Rubén Pérez-Aranda KDPOF	X		
56	Luisma Torres KDPOF	X		
57	Peter Stassar (Huawei)		X	
58	Jonathan Ingham - Independent	X		
59	Nikolay Ledentsov Jr. - VI Systems GmbH	X		
60	Richard Pitwon AIO Core	X		
61	Mark Kimber (Semtech)		X	
62	Yung Son - Optomind	X		
63	Kangmin Hu [Innogrit]	X		
64	Yasuo Hidaka [Credo]			X
65	Vipul Bhatt [II-VI]	X		
66	Ramana Murty [Broadcom]	X		
67	Jane Lim - Cisco Systems			
68	Yong Kim [Axonne]			
69	Raymond Nering Cisco		X	
70	Gary Nicholl Cisco		X	
71	Upen Reddy CISCO		X	
72	Kent Lusted [Intel]	X		
73	Takeo Masuda [OITDA/PETRA]			
74	Ruoxu Wang Huawei		X	
75	Roman Shubochkin OFS	X		
76	Chongjin Xie Alibaba	X		
77	James Young Commscope	X		
78	John Kamino - OFS	X		
79	Adam Healey [Broadcom]			X
80	Guangcan Mi /huawei			
81	Xiang He Huawei		X	
82	Yu Xu / HUAWEI			
83	Frank Chang Source Photonics		X	
84	Frank Lambrecht Xillinx			X
		49	13	13

Contribution #3:
Title: "P802.3db Timeline Discussion"
Presenter: Mabud Choudhury (affiliated with OFS)
choudhury_3db_01_1120.pdf

- Presentation provided:
  - Timeline comparisons for .3cm, .3db PAR estimate, .3cu relative to proposed timeline for .3db
  - Proposed timeline for .3db for TF discussion and possible approval.
- Technical discussion followed.

- Topics discussed included: If 100 m reach objectives were considered for timeline. Proposed timeline too aggressive if 100 m reach objectives are added. Aggressive but realistic timeline. Urgency in developing 100 Gb/s signaling MM PMDs.
- Clarifying questions asked and answered.
- TF feedback and consensus building.

Motion #3:
Move to adopt the following objectives:

- Define a physical layer specification that supports 100 Gb/s operation over 1 pair of MMF with lengths up to at least 100 m
- Define a physical layer specification that supports 200 Gb/s operation over 2 pairs of MMF with lengths up to at least 100 m
- Define a physical layer specification that supports 400 Gb/s operation over 4 pairs of MMF with lengths up to at least 100 m

And request the 802.3 Working Group to approve these objectives for IEEE
P802.3db Task Force
• M: Earl Parsons
• S: Jose Castro
• Technical: >= 75%. IEEE 802.3 WG voters only (for Telephonic Plenary).
• Y: 37 N: 11 A: 5
• Motion Passes!

[Note: the vote was taken using the polling feature of Webex, and attendees were requested to vote only if they were 802.3 voters. After the vote was recorded in Webex, the voter names were manually compared to the current 802.3 voter list provided by 802.3 Secretary Jon Lewis following the Opening Plenary, by both the TF Chair and TF Secretary. Four "Yes" votes were invalidated in the process, resulting in the tally given above, and listed below.]

Motion #3 Voter List (802.3 Voters only):

	Attendees	A	B	C
1	Rick Pimpinella - Panduit Corp.	X		
2	Flavio Marques / Furukawa Electric	X		
3	Mabud Choudhury OFS	X		
4	Earl Parsons [CommScope]	X		
5	David Lewis Lumentum	X		
6	John Johnson Broadcom	X		
7	Olindo Savi Hubbell	X		
8	Chan Chih David Chen AOI	X		
9	Ali Ghiasi [Ghiasi Quantum]	X		
10	Eric Maniloff Ciena		X	
11	Bob Voss PANDUIT	X		
12	Mike Klempa Amphenol	X		
13	Mike Dudek Marvell	X		
14	Qingya She Fujitsu	X		
15	Jeffery Maki [Juniper]	X		
16	Ilya Lyubomirsky Inphi Corp.	X		

17	David Piehler [Dell]	X		
18	Vince Ferretti Corning	X		
19	David Malicoat Independent / Senko	X		
20	Chris Diminico Panduit	X		
21	Massimo Sorbara [Globalfoundries]			X
22	Phil Sun Credo	X		
23	Mark Nowell - Cisco		X	
24	Beth Kochuparambil - Cisco			X
25	Nathan Tracy TE	X		
26	Edward P. Sayre, North East Systems Associates, Inc.	X		
27	Tom Palkert Macom, Samtec	X		
28	Richard Mellitz Samtec	X		
29	Brian Welch Cisco		X	
30	John S Abbott Corning	X		
31	Leon Bruckman Huawei			X
32	Piers Dawe [Nvidia]	X		
33	Carlos Pardo KDPOF	X		
34	Rubén Pérez-Aranda KDPOF	X		
35	Luisma Torres KDPOF	X		
36	Peter Stassar (Huawei)		X	
37	Jonathan Ingham - Independent	X		
38	Richard Pitwon AIO Core	X		
39	Yasuo Hidaka [Credo]			X
40	Jane Lim - Cisco Systems		X	
41	Yong Kim [Axonne]	X		
42	Raymond Nering Cisco		X	
43	Gary Nicholl Cisco		X	
44	Kent Lusted [Intel]	X		
45	Takeo Masuda [OITDA/PETRA]			
46	Ruoxu Wang Huawei		X	
47	Rob Aekins, Legrand	X		
48	James Young Commscope	X		
49	Adam Healey [Broadcom]	X		
50	Guangcan Mi /Huawei		X	
51	Xiang He Huawei		X	
52	Yu Xu / HUAWEI			
53	Frank Chang Source Photonics		X	
54	Mike Peng Li Intel			X
55	Bo Zhang [Inphi]	X		
		37	11	5

Contribution #4:
Title: "Comparisons and Challenges Associated with Linear Interface"
Presenter: Ali Ghiasi (affiliated with Ghiasi Quantum)
ghiasi_3db_01_1120.pdf

- Presentation provided:
  - Background on direct drive optics
  - OIF ACO
  - Eye opening from switch vs optics CDR
  - Eye opening for CK channels
  - Measured eye opening through mated MCB/HCB
  - THD and linearity requirements for direct drive optics
  - Power comparisons between retimed vs direct drive optics
  - 100G MMF link results
  - Summary/Recommendation: Given that timeline of the .3db TF to D1.0 no later than March-2021 the TF focus should be developing optical PMDs instead of technically very challenging direct drive linear optics.
- Technical discussion followed.
- Topics discussed included: Thorough contribution. If having linear interface as optional made it more acceptable.
- Clarifying questions asked and answered.

Motion #4:
Move to adopt the P802.3db proposed timeline in slide 4 of choudhury_3db_01_1120.pdf

- M: Mike Dudek
- S: Richard Pitwon
- Approved by unanimous consent (Technical >= 75%)

After meeting TF adopted timeline posted:
https://www.ieee802.org/3/db/P802d3db_Timeline_Approved_November_2020.pdf

Future Meetings:

- See: http://ieee802.org/3/calendar.html and http://ieee802.org/3/interims/index.html
- P802.3db TF Ad Hoc Teleconferences are currently scheduled:

Biweekly on Thursdays at 12 Noon to 2 pm Eastern US (EST/UTC -5):
http://www.ieee802.org/3/db/public/adhoc/index.html

- Next P802.3db TF Ad Hoc Teleconferences:

Thursday, December 3, 12 Noon to 2 pm Eastern US (EST/UTC -5) [next meeting]

- Baseline Review and other possible contributions

Thursday, December 17, 12 Noon to 2 pm Eastern US (EST/UTC -5)

- Baseline Review and other possible contributions

Motion #5:
Move to Adjourn TF Telephonic Interim Meeting

- M: James Young
- S: David Malicoat
- Approved by unanimous consent. (Procedural > 50%)

Meeting Adjourned: The Task Force Telephonic Plenary meeting was adjourned at 2:04 PM EST/ UTC -5, Thursday, November 12, 2020.

Next Meeting:
P802.2db TF Ad Hoc Webex meeting on Thursday, December 03, 2020 at 12:00 noon – 2:00 PM EST/UTC -5.

Appendix A: Attendees at the IEEE P802.3db 100 Gb/s, 200 Gb/s, and 400 Gb/s Short Reach Fiber Task Force Telephonic Plenary Meeting, 10 & 12 November 2020.
70 individuals attended (Webex) on Tuesday, 10 November 2020, 12:01 PM – 1:54 PM EST/UTC -5
87 individuals attended (Webex) on Thursday, 12 November 2020, 12:00 Noon – 2:04 PM EST/UTC -5

	Last Name	First Name	Affiliation	Employer	10-Nov	12-Nov
1	Abbott	John S.	Corning	Corning Incorporated	X	X
2	Aekins	Rob	Legrand	Legrand	X	X
3	Akbaba	Enis	Maxim Integrated	Maxim Integrated	X	X
4	Bhatt	Vipul	II-VI	II-VI	X	X
5	Bolig	Matt	Inphi	Inphi Corp.	X	X
6	Bruckman	Leon	Huawei	Huawei	X	X
7	Castro	Jose	Panduit	Panduit Corp.	X	X
8	Chan	Richard	II-VI	II-VI		X
9	Chang	Frank	Source Photonics	Source Photonics	X	X
10	Chen	Chan Chih David	AOI	AOI	X	X
11	Choudhury	Mabud	OFS	OFS	X	X
12	Dawe	Piers	Nvidia	Nvidia	X	X
13	Didde	Stephen	Keysight	Keysight	X	X
14	Diminico	Chris	Panduit	M C Communications, LLC		X
15	Dube	Kae	UNH-IOL	UNH-IOL		X
16	Dudek	Mike	Marvell	Marvell	X	X
17	Ferretti	Vince	Corning	Corning Incorporated	X	X
18	Furlong	Michael	Inphi	Inphi Corp.	X	
19	Ghiasi	Ali	Ghiasi Quantum, Inphi	Ghiasi Quantum LLC	X	X
20	Guckenberger	Drew	Maxlinear	Maxlinear	X	
21	Gustlin	Mark	Cisco	Cisco Systems, Inc.	X	
22	He	Xiang	Huawei	Huawei	X	X
23	Healey	Adam	Broadcom	Broadcom	X	X
24	Hidaka	Yasuo	Credo	Credo Semiconductor	X	X
25	Hoser	Mirko	II-VI	II-VI	X	
26	Hu	Kangmin	Innogrit	Innogrit	X	X
27	Ingham	Jonathan	Independent	Independent	X	X
28	Jackson	Kenneth	Sumitomo	Sumitomo	X	X
29	Jimenez	Andy	Anixter Inc.	Anixter Inc.	X	
30	Johnson	John	Broadcom	Broadcom		X
31	Kamino	John	OFS	OFS	X	X
32	Kim	Yong	Axonne	Axonne		X

33	Kim	Inho	Marvell	Marvell	X	X
34	Klempa	Mike	Amphenol	Amphenol		X
35	Kochuparambil	Beth	Cisco	Cisco Systems, Inc.		X
36	Koleva	Vera	II-V!	II-VI		X
37	Lambrecht	Frank	Xillinx	Xillinx		X
38	Latchman	Ryan	MACOM	MACOM		X
39	LeCheminant	Greg	Keysight	Keysight	X	X
40	Ledentsov	Nikolay	VI Systems	VI Systems GmbH		X
41	Ledentsov Jr.	Nikolay	VI Systems GmbH	VI Systems GmbH		X
42	Lee	Sylvanus	Leviton Manufacturing	Leviton Manufacturing	X	X
43	Lewis	David	Lumentum	Lumentum	X	X
44	Li	Mike Peng	Intel	Intel Corporation		X
45	Lim	Jane	Cisco	Cisco Systems, Inc.	X	X
46	Lin	Alex	MediaTek	MediaTek Inc	X	
47	Lingle, Jr.	Robert	OFS	OFS	X	X
48	Lusted	Kent	Intel	Intel Corporation	X	X
49	Lyubomirsky	Ilya	Inphi Corp.	Inphi Corp.	X	X
50	Maki	Jeffery	Juniper	Juniper	X	X
51	Malicoat	David	Independent, Senko	Malicoat Networking Solutions	X	X
52	Maniloff	Eric	Ciena	Ciena	X	X
53	Marques	Flavio	Furukawa Electric	Furukawa Electric LatAm S.A.	X	X
54	Masuda	Takeo	OITDA/PETRA	OITDA	X	X
55	Mellitz	Richard	Samtec	Samtec, Inc.	X	X
56	Mi	Guangcan	Huawei	Huawei		X
57	Mitcheltree	Tom	US Conec	US Conec	X	X
58	Murty	Ramana	Broadcom	Broadcom	X	X
59	Nering	Raymond	Cisco	Cisco Systems, Inc.	X	X
60	Nicholl	Gary	Cisco	Cisco Systems, Inc.	X	X
61	Nordin	Ron	Panduit	Panduit Corp.		X
62	Nowell	Mark	Cisco	Cisco Systems, Inc.	X	X
63	Palkert	Tom	Samtec, Macom	EIC	X	X
64	Pardo	Carlos	KDPOF	Knowledge Development for POF SL		X
65	Parsons	Earl	CommScope	CommScope	X	X
66	Pérez-Aranda	Rubén	KDPOF	Knowledge Development for POF SL	X	X
67	Piehler	David	Dell	Dell	X	X
68	Pimpinella	Rick	Panduit Corp.	Panduit Corp.	X	X
69	Pitwon	Richard	AIO Core	Resolute Photonics		X
70	Radhamohan	Rajesh	Broadcom	Broadcom	X	X
71	Ramesh	Sridhar	Maxlinear	Maxlinear	X	X
72	Savi	Olindo	Hubbell	Hubbell	X	X

73	Sayre	Edward	North East Systems Associates, Inc.	North East Systems Associates, Inc.		X
74	She	Qingya	Fujitsu	Fujitsu	X	X
75	Shubochkin	Roman	OFS	OFS		X
76	Son	Yung	Optomind	Optomind		X
77	Sorbara	Massimo	Globalfoundries	GLOBALFOUNDRIES		X
78	Stassar	Peter	Huawei	Huawei	X	X
79	Sun	Yi	OFS	OFS	X	X
80	Sun	Phil	Credo	Credo Semiconductor	X	X
81	Swanson	Steve	Corning	Corning Incorporated	X	
82	Tan	Kan	Tektronix	Tektronix		X
83	Theodoras	James	HG Genuine	HG Genuine	X	
84	Thompson	Lance	II-VI	II-VI	X	X
85	Torres	Luisma	KDPOF	Knowledge Development for POF SL	X	X
86	Tracy	Nathan	TE	TE Connectivity	X	X
87	Ulrichs	Ed	Intel	Intel Corporation	X	X
88	Vanderlann	Paul	UL	UL	X	
89	Voss	Bob	Panduit	Panduit Corp.		X
90	Wang	Ruoxu	Huawei	Huawei		X
91	Wang	Tongtong	Huawei	Huawei	X	
92	Welch	Brian	Cisco	Cisco Systems, Inc.	X	X
93	Xie	Chongjin	Alibaba	Alibaba		X
94	Xu	Hu	Huawei	Huawei		X
95	Young	James	CommScope	CommScope	X	X
96	Zhang	Bo	Inphi	Inphi Corp.	X	X
97	Zivny	Pavel	Tektronix	Tektronix, Inc.		X
	Total				70	87